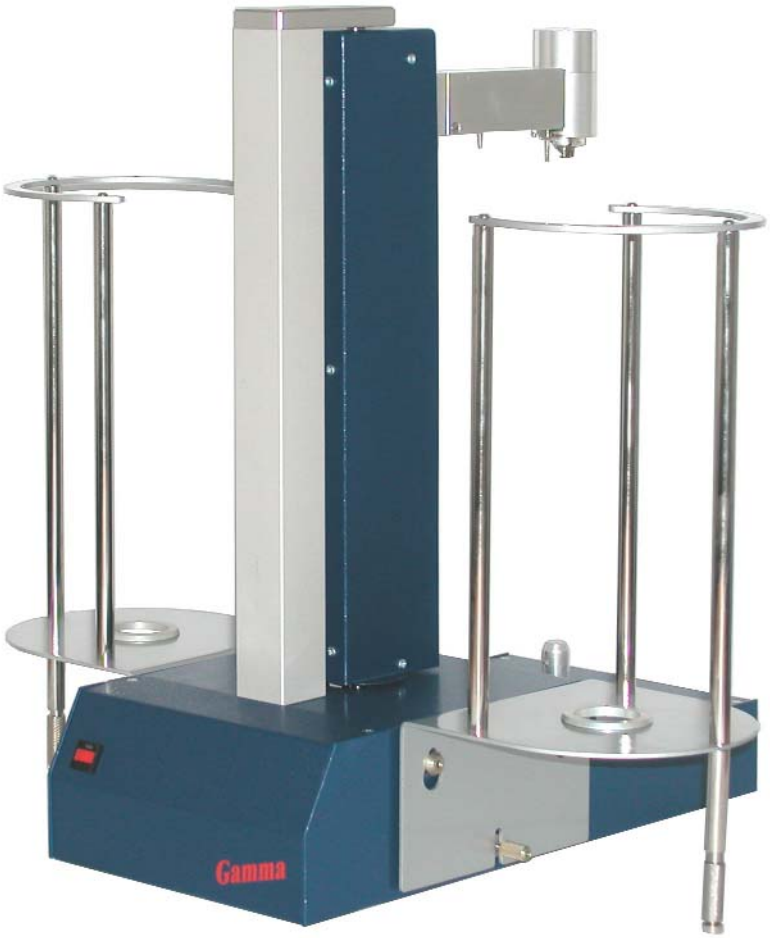

Gamma

CD/DVD Autoloader

User's Manual

Gamma

CD/DVD Autoloader

User's Manual

Version 1.0
Revision 07/2003

IGAlliance
MANUFACTURERS ASSOCIATION
www.ig-alliance.com
info@ig-alliance.com

Thank you for purchasing our Gamma CD/DVD Autoloader. Due to its new and unique design it is user friendly and makes the duplication and printing of CD-Rs and DVD-Rs practical and affordable.

We put every effort into engineering and building this autoloader to work properly for many years. Please spend a few minutes reading this manual which will acquaint you with the Gamma autoloader.

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1. INTRODUCTION

The Gamma CD/DVD Autoloader is designed to create many duplication solutions. It fits for standalone duplicators Gamma CDR/DVD-40XX and PC controlled duplication solutions. The number of CD-R/W, DVD-R/W or DVD+R/W recorders varies. So there is a possibility to install 1, 2 or 4 recorders. Optionally can be duplication system equipped with ink-jet or thermal-transfer printer.

The Gamma Autoloader is manufactured in several variations.

Gamma autoloaders:

G2/100 - for max. 2 drives and printer option, input capacity 100 discs
G4/165 - for max. 4 drives and printer option, input capacity 165 discs
G4/495 - for max. 4 drives and printer option, input capacity 495 discs in 3 input bins
G8/250 - for max. 8 drives, input capacity 495 discs in 3 input bins
G8/750 - for max. 8 drives, input capacity 750 discs in 3 input bins

Drive boxes for PC based solutions :

C2 - 2 drives box with cover
C2 + P1 - 2 drives box with printer stand (on top)
C4 - 4 drives box with cover
C4 + P1 - 4 drives box with printer stand (on top)

Printer stand P0 – for printer autoloader

CD picker – short and long version – for easy loading and unloading discs

2. INSTALLATION

2.1 Unpacking the autoloader

Inspect the shipping container for signs of shipment damage. If damage is evident, contact the carrier directly to specify the nature and extent of damage.

Transport package should contain following items:

- Gamma autoloader (model Gamma 2, Gamma 4 or Gamma 8)
- power cord
- serial cable (RS232)
- spanner
- imbus key, size 2,54 mm
- input bin (*1
- output bin (*2
- CD picker
- 3 pcs cotton buds

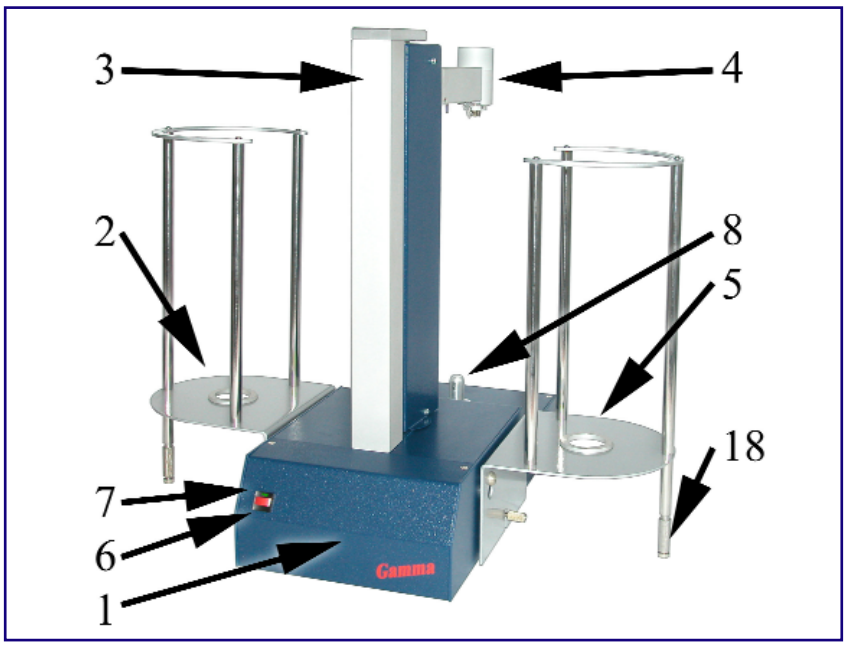
Following table show type of input and output bins (*1, (*2:

Gamma autoloader	input bin	output bin	capacity
Gamma 2/100	single	single	100 CD/DVD
Gamma 4/165	single	single, spindle	165 CD/DVD
Gamma 4/495	double	double	495 CD/DVD
Gamma 8/250	single	single, spindle	250 CD/DVD
Gamma 8/750	double	double	750 CD/DVD

Tab 1

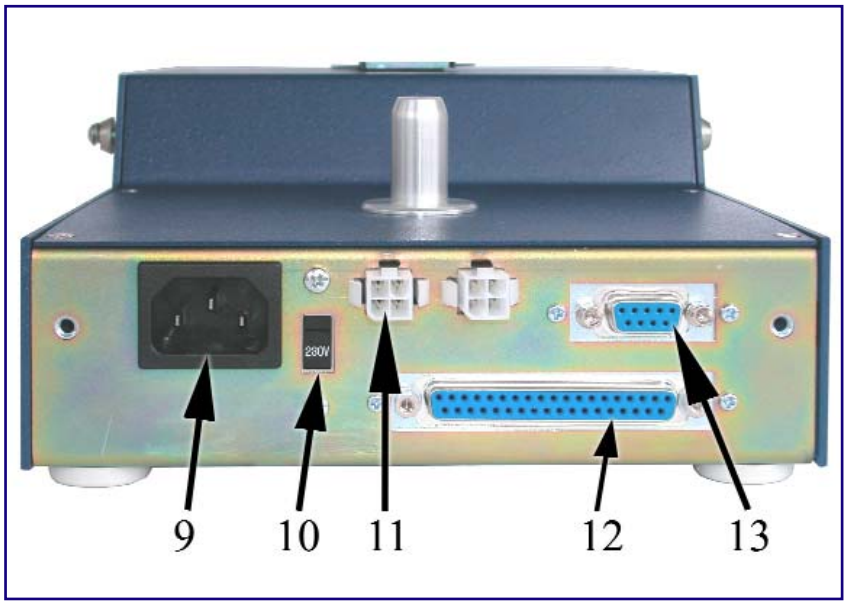
2.2 Identifying the parts

This pictures shows the Gamma autoloader, its input, output and reject bins, turn on/off, power switch, status LED, lifter, head, power port, power to drives, RS232 and connector for devices.



1 - Gamma autoloader
2 - Input bin (*1
3 - Lifter
4 - Head
5 - Output bin (*2
6 - Power switch
7 - Status LED
8 - Reject bin
18 - Adjusting screw

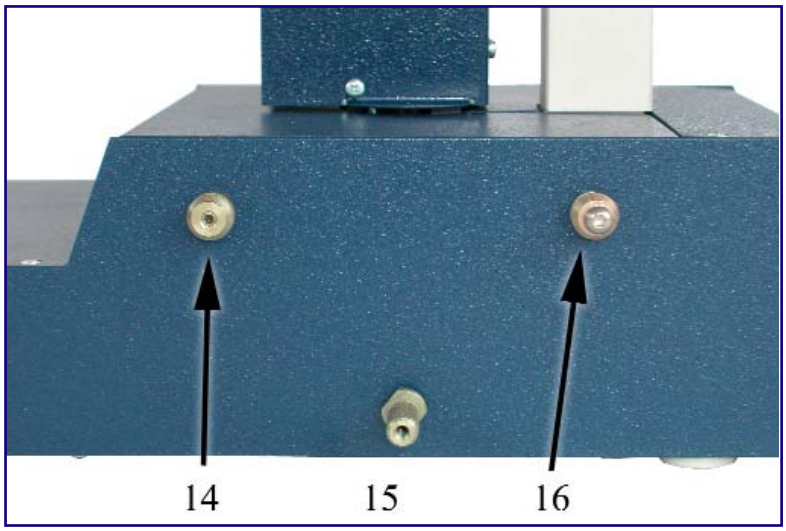
Fig. 1 - Front view



9 - Power port
10 - Power supply switch
11 - D.C. power
12 - Device drive port
13 - Serial port RS232

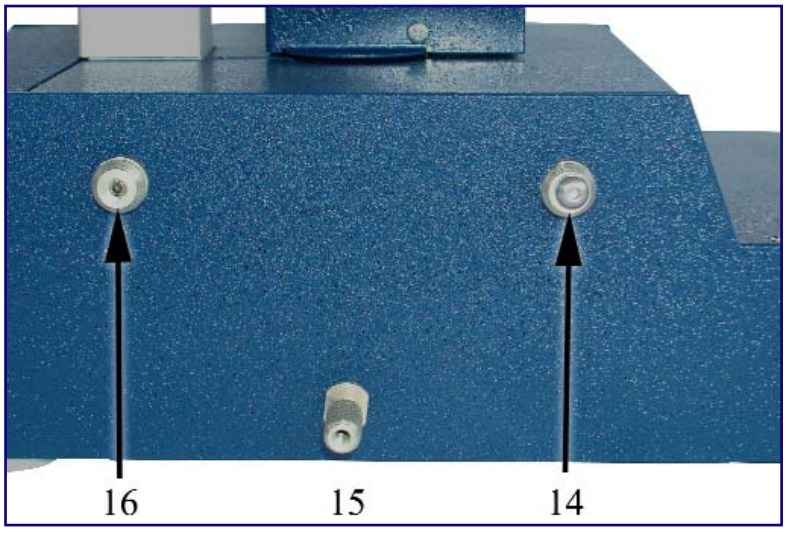
Fig. 2 - Rear view

The following pictures shows the locating input and output bins, see Fig. 3L and Fig. 3R:



14 - hook
15 - fixation nut
16 - excenter hook

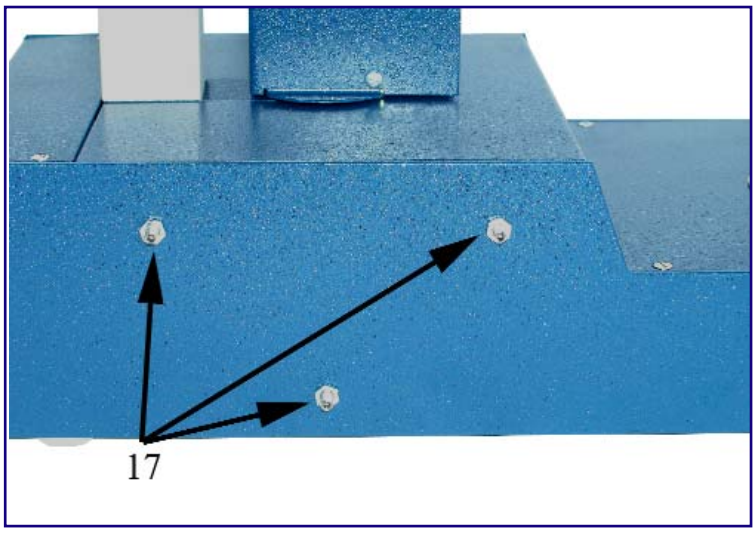
Fig. 3L - Left side view



14 - hook
15 - fixation nut
16 - excenter hook

Fig. 3R - Right side view

The following pictures shows the Gamma 2 locating input and output bins, see Fig. 4a



17 - Winding

Assembling output and input bin:

1. Insert input and output bins on a winding.
2. Screw on nuts.
3. Tighten the screws.

Fig. 4a - Gamma 2 right side view

The Gamma 2 left side view is the same.

The following pictures shows the Gamma 4 and Gamma 8 locating output spindle, see Fig. 4b. Output spindle is option for Gamma 4 and 8.

Assembling output spindle:

1. Insert steel square
2. Screw on the screws
3. Insert output spindle

Fig. 4b - Gamma 4 and Gamma 8 right side view
OPTION: Steel square for Output spindle

2.3 Assembling of Gamma autoloader

The Gamma autoloader should be used in a closed room with temperature from 15^{0}C to 35^{0}C and humidity from 15% to 85%. You have to place the Gamma autoloader to a robust and flat surface, distant from sources of heat and humidity. Size of working place should be at least 45 x 45 cm. Around the autoloader must be 25cm free space for guaranteeing fast intervention on the power switch, manipulation and good ventilation The front side of the autoloader should be accessible for user operation.

To assembling autoloader follow up these directions:

1. Put the autoloader on the desk

2. Put the input bin - hang the input bin on two hooks and lock screw on the left side of autoloader. If you have Gamma 2 model hang the input bin and lock with three nut.

3. Put the output bin - hang the input bin on two hooks and lock screw on the right side of autoloader. If you have Gamma 4 model and option spindle you touch to steel square on the right side and tighten with three screws. Put the spindle on the steel square. If you have Gamma 2 model hang the output bin and lock with three nut.

   The adjusting nut and excenter hook were settings and fixed in a factory. If you need to set input and output bin see chapter *Maintenance*

4. Connect serial cable to the RS232 control port on the rear side.

5. Connect power cord to the power port on the rear side.

Check voltage of electricity before the autoloader is connected to it!

The Gamma autoloader is delivered with power supply for 115 and 230 V. Before connection to the electricity, check voltage level set! Factory adjustment is 230V.

6. Turn on the Gamma autoloader - press button on the front panel.

WARNING *After turn on the Gamma autoloader, lifter will move with its head! Keep empty head area!*

7. In this step you calibrate Gamma autoloader (input, output and reject bins). See following chapter *Calibration.*

8. The Gamma autoloader is ready. You can use it.

3. CALIBRATION

3.1 Calibration connect

For calibration you will need computer (PC) with CD reader and CD with calibration program. Connect serial cable from the RS232 control port of Gamma autoloader to COM1 (COM2) port your PC. Connect power cord to the power port on the rear side. Turn on Gamma autoloader.

3.2 Calibration software

The calibration software is a utility which alows the user to adjust all mechanical positions and other important internal variables which affect loader behaviour.

Using it is necessary to make the loader work properly and reliable. The most precise adjusting of all positions is the best way to have least problems with the loader functionality. So run the calibration after loader instatlation and also always when you see the positions are not set exactly. Because time to time the mechanical locations can change a little because of variety of reasons. For example when the table or base pad under the autoloader is not robust enough and it is deforming by loader weight. Or sombody hits the loader when walks around..

3.3 Running the calibration

To start the calibration utility run program “calibration.exe” from CD. So you can copy calibration software to your PC and run from PC.

3.4 Setting the loader configuration

At the starting window (Fig.5) at first select the PC COM port connected to the loader. After selecting program automatically reads current loader configuration which you can then change. You can select three basic modes depending on bin configuration you have.

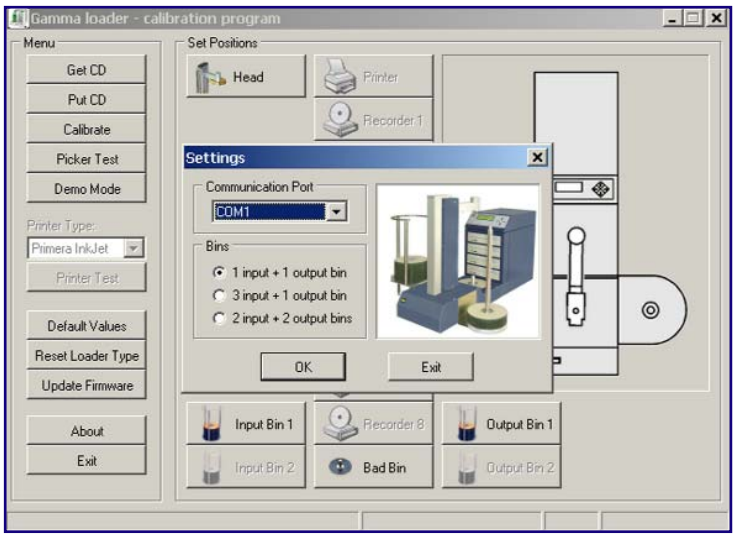


Fig. 5 - Calibration settings

There are three modes

1. Input bin (1) on the left and output bin (2) on the right see *Fig. 6*.

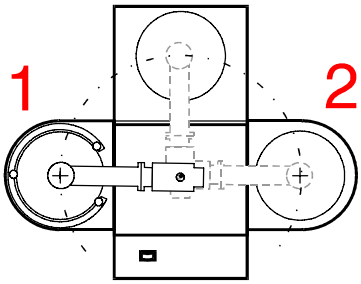


Fig. 6 - Single bins

2. Three input bins one output bin. At the beginning the user fill bins (1), (2), and (3) by disks see *Fig. 7*. Loader loades from bin 1 and unloads to bin 4 when the bin 1 is empty loader goes to bin 2 and loads from it and unloades to emptied bin 1. When bin 2 is empty loading is from bin 3 and unloading to bin 2. Loader reports error after the last input bin 3 is empty.

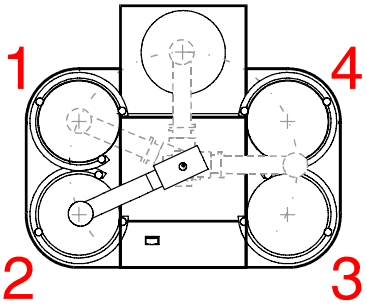


Fig. 7 - Double bins

3. Two independent input bins and two independent output bins. This is special mode which must be supported by the control system. Input bins are on the left (1), (2) and output bins (3), (4) are on the right side. The difference between this mode and mode 2 is that in mode 3 each bin has own independent address so the system can control the position by itself. In mode 2 the system can only differentiate between two possibilities - input/output bin and real positions are controlled by the loader. The mode 3 can be used for special systems which for example ues CDs in one bin and DVDs in second bin.

Main window

After you select the bin configuration you can use functions from main window to adjust all possible topics. Main window is divided to two sections.

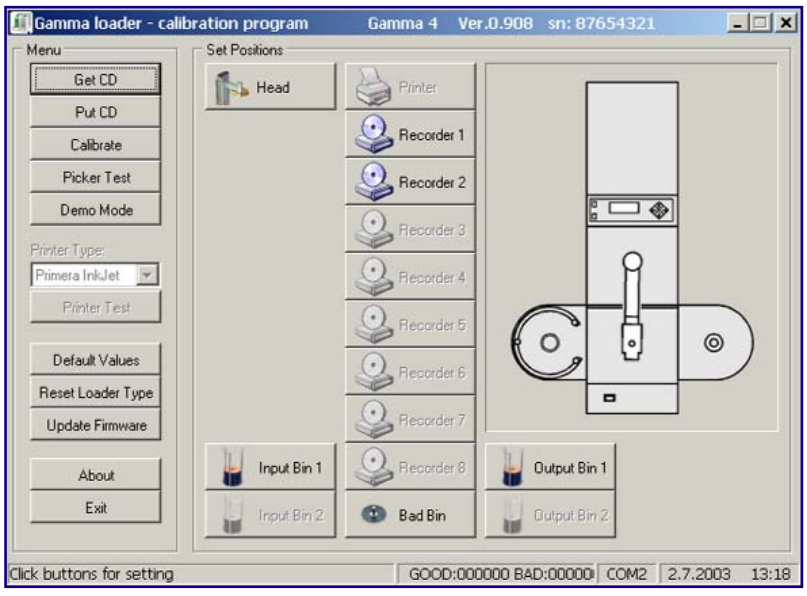


Fig. 7 - Main Menu

Menu - you can select special functions - see below *Set Position* - to select and recalibrate individual position.

Setting positions - this feature is implemented because of possibility to adjust source or target place of arm autoloader moving. So if you see the CD is picked or put not exactly to the right position you can recalibrate the position to be exact.

1. Select the position to recalibration by pushing the right button in *Set position* section of Main window. As you are pointing on the button the position is showed on schematic picture.

2. After selecting the arm goes to the old position and you get new window for setting new position - by buttons (or also by arrow keys for small steps and shift + arrow keys for bigger steps) you can move head up, down, left and right by small or bigger steps to reach the target place. After you set the position well select OK to store it in the non volatile memory of the loader electronics. And return to main window. Note: you can use "Get CD" button before setting the position to have the CD in the head during calibration. CD is get from input bin so the input bin should be calibrate well before using this fuction.

Head offset - the only value in "Select Position" section of Main window which is set diferently is setting head offset. Push "Head" button to get "Setting head offset" window where the dimension is showed in the schematic picture (*Fig. 8*).

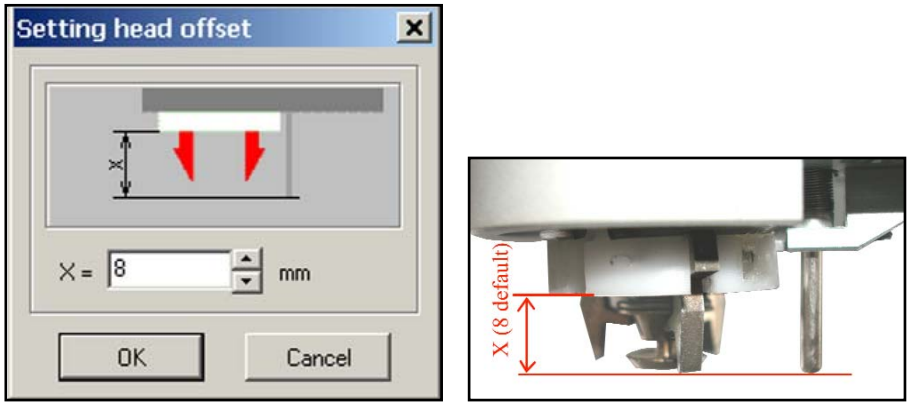


Fig. 8 - Settings head offset (calibration SW and head detail)

The point of this value is to go by head the right distance to the CD after sensor reaction. So if this value is bigger the head will go closer to the CD when it is getting. If the value is too big the CD is pressed by the head when it is getting. So if you have the problems with CD getting because of head doesn't go close enough to the CD enlarge this value by the missing distance. Standard values are between 8 - 12 mm depending on the length of sensor pin.

Special functions

In "Menu" section of Main window you can select different functions to test the basic funstions:

Get CD	- gets the CD from input bin (the bin should be calibrated before)
Put CD	- returns the CD back to input bin
Picker Test	- switches on the power to the solenoid for a moment
Loader Reset	- makes software reset of the loader
Default Values	- this topic resets all internal positions to the manufacturing state

4. MAINTENANCE

4.1 Cleaning the Gamma autoloader

To keep your autoloader operating at its best, you should clean it throughly several times a year. Before cleaning the printer, make sure that:

- The Gamma autoloader is turned off
- The power cord is removed
- The CD/DVD media is removed

Use soft brush to carefully remove all dust and dirt. If the case and bins are dirty or dusty, clean it with a soft, fluff free cloth.

4.2 Head srvicing

Servising every 5000 media

Head don't need special servising. You must after every 5000 CD/DVD media grese cone of head. Use WD-40 spray. You keep following steps:

- Spraying WD-40 to cotton buds
- Press cotton buds on a cone of head and segment, from booth side for every segment. See Fig 10

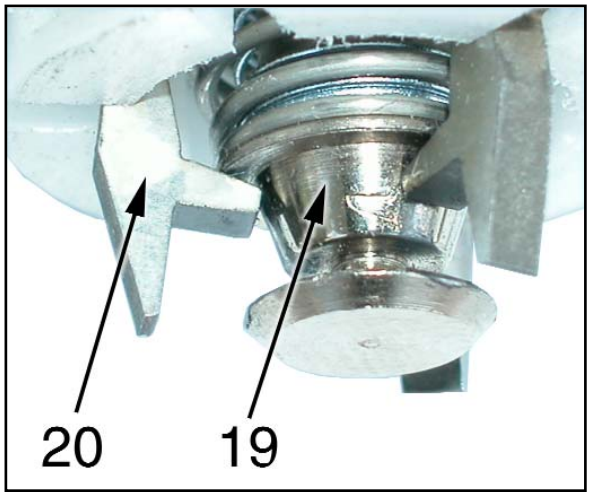


Fig. 9 - Head detail

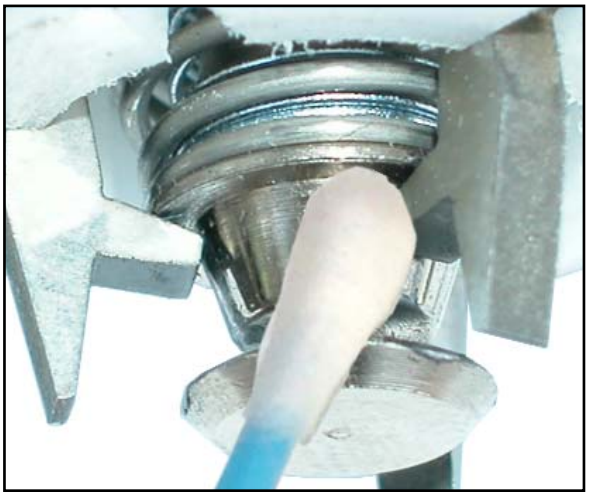


Fig. 10 - Head cleaning

19 - Cone of head
20 - Segment

Servising every 100000 media

After every 100000 CD/DVD you must provide head cleaning at there dealer or servisman. Contact your dealer or servisman, please.

WD-40 spray

4.3 Settings Input and Output bins

For calibration input and output bins follow these directions:

1. You must calibration input bin firstly.
2. Connect Gamma autoloader and PC with RS232 serial cable.
3. Run calibration software.
4. Take off all media from all bins.
5. Use imbus key and unloose screw of excenter but excenter (14) mustn't it be free.
6. Press “Input bin (n)” button (bin 1 firstly, from calibration software), head will be set to down in selected bin. See Fig. 11
7. Take a look at head from the top of input bin.
9. Use arrow keys left and right to head centering. See Fig.12 and Fig. 13

Fig. 11 - Reject head position

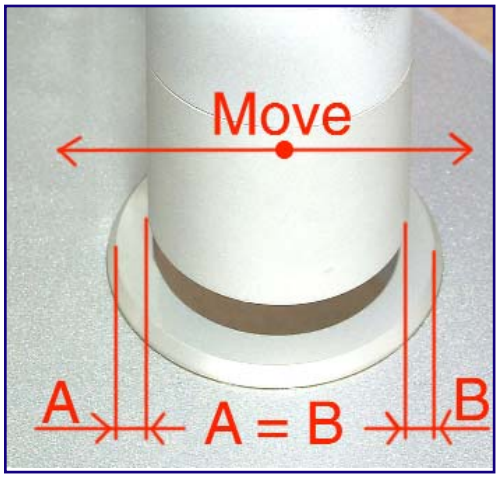


Fig. 12 - Head centering

Fig. 13 - Right position

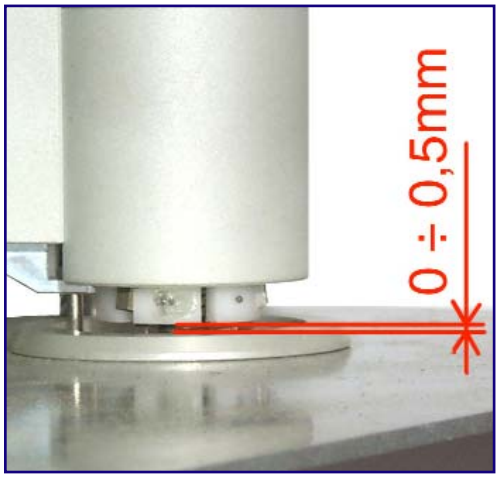


Fig. 14 - Setting head down position

10. Use arrow keys up and down to setting head down position. See Fig.14
11. Press ENTER key to save.
12. Repeat steps 6 to 11 for all input and output bins.
13. Insert one CD into “Input bin”.
14. Press button “Get CD” from calibration software.
15. Press requested “Input bin (n)” or “Output bin (n)” button.

16. Press “Up” button from “Move Head” section in calibration software.
17. Take a look at CD from the top selected bin. See Fig. 15 and 16

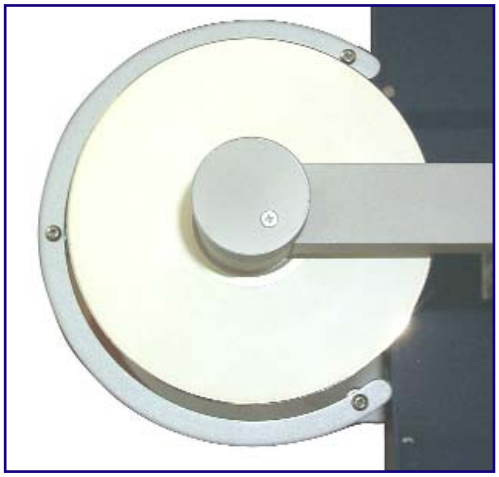


Fig. 15 - Reject CD position

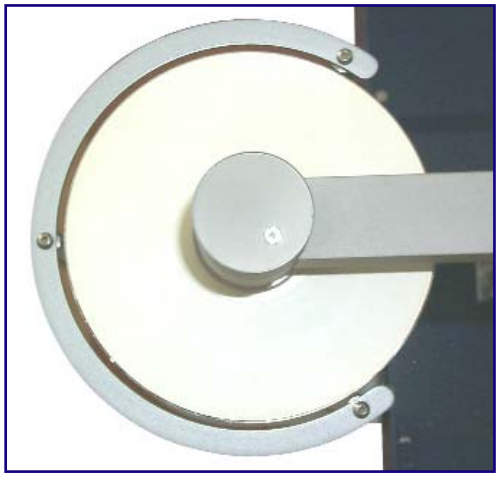


Fig. 16 - Right CD position

18. Use “Adjusting screw” (18), see Fig. 1, and setting selected bin. See Fig. 17. Bin will move according to blue arrows Fig. 18.
19. Use spanner to “Excenter” (16), see Fig. 3, and setting selected bin. See Fig. 17. Bin will move according to red arrows Fig. 18.

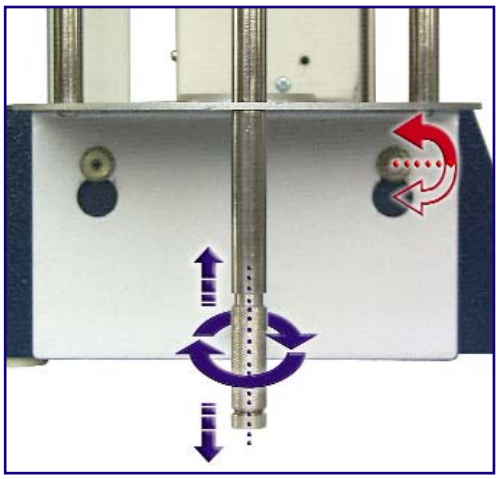


Fig. 17 - Set bin position (X)

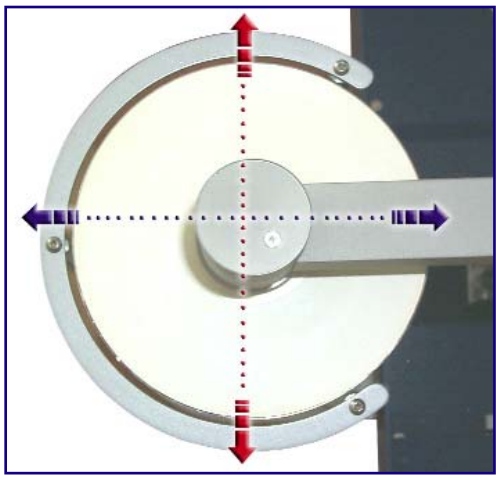


Fig. 18 - Set bin position (Y)

20. Repeat steps 18 and 19 when is bin setting. See Fig. 17 and 18. When move head down or up, mustn't it touch on pole bin.
21. Repeat steps 13 to 20 for all input and output bins.
22. They are settings input and output bins press “Cancel” button, “Put” button and close calibration software. You remember setting Reject bin.

4.4 Settings spindle - Under reconstruction

For calibration spindle you follow these directions:

1. You must calibration input bin firstly. When calibration input bin is correct you can continue next steps.
2. Connect Gamma autoloader and PC with RS232 serial cable.
3. Run calibration software.
4. Take off Output spindle and lay up him out autoloader.
5. Press “Output bin” button in calibration software. Head will be set to down in Output bin.
6. Use “Up” button (Shift + Up) and set heads to the upper position - top of the lifter.
7. Insert Output bin.
8. Take a look at head and Output spindle.See Fig. 19
9. Use arrow keys left and right to head centering. See Fig. 20

Fig. 19 - Bad head and spindle position

Fig. 20 - Centering position

10. Press the Enter key to save.
11. It is Reject bin setting press “Put” button and close calibration software. Gamma autoloader is ready to use. You remember setting Reject bin.

4.5 Settings Reject bin

For calibration Reject bin follow these directions:

1. You must calibration input bin firstly. When calibration input bin is correct you can continue next steps.
2. Connect Gamma autoloader and PC with RS232 serial cable.
3. Run calibration software.
4. Press “Reject bin” button head will be set to down above Reject bin.
7. Take a look at head and Reject bin.
9. Use arrow keys left and right to head centering. See Fig. 21
10. Use arrow keys up and down to setting head down position. See Fig. 22

Fig. 21 - Bad head position

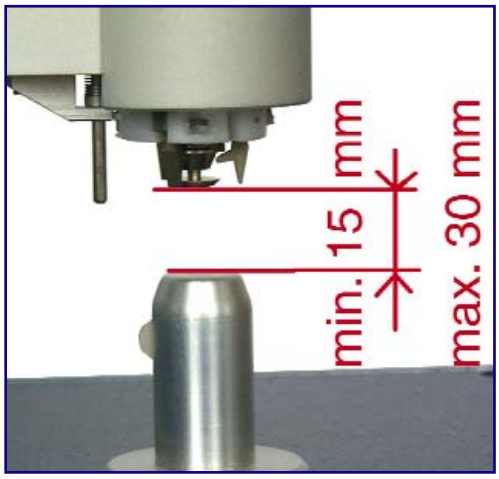


Fig. 22 - Centering and setting head position

11. Press ENTER key to save.
21. It is Reject bin setting press “Put” button and close calibration software. Gamma autoloader is ready to use.

4.6 Settings Gamma 2

The input and output bins are adjusting and fixed in a factory. You do not need settings input and output bins.

4.7 Upgrade firmaware

By this utility you can upgrade a firmware of the loader to the newest one which is available on www.terra.cz At first download the firmware file from the website and type the path to this file in Flasher input box see *Fig.7*. The select Upload and the firmware will be uploaded.

Note: Be very carfull during uploadith to provide uninteruptable power and connection. Interuption of connection or power during programming can cause the loader will not work without servicing.

5. APPENDIX

5.1. Description of error codes

Error	Description	Error	Description
00	OK	40	sequence error
10	loader jammed	41	get after get
11	lost CD	80	calibration error
12	lift block	81	EEPROM problem
13	arm block	90	disk stuck
14	drop CD error	91	lost CD on way
15	can't get if hold	A0	output bin full
16	no CD to get	C0	CD in wrong place
17	can't grip CD	C1	no tray on way
18	hitch or lift limit	C2	reject way blocked
20	input hopper empty	D0	reject hopper full
		FE	unrecognized error

If exist problem you eliminate this problem and press Enter.

5.2 Technical specification

		Gamma 2/100	Gamma 4/165	Gamma 4/495	Gamma 8/250	Gamma 8/750
In/Output bin (pcs)		100	165	495	250	750
Reject bin (pcs)				10		
Electricity				115 and 230V, 50/60Hz		
Connectivity				RS232		
Fuse:				2A		
Consumption:				0.5A/115V, 0.25A/230V		
Dimensions	width	452 mm	452 mm	440 mm	452 mm	440 mm
	depth	360 mm	360 mm	360 mm	360 mm	360 mm
	high	337 mm	437 mm	437 mm	572 mm	572 mm
Weight:	Netto	15 kg	15 kg	15 kg	15 kg	15 kg
	Brutto	15 kg	15 kg	15 kg	15 kg	15 kg
Single bins wight		1,6 kg	2 kg	-	2,6 kg	-
Double bins wight		-	-	4kg	-	5,2 kg

5.3 Environmental requirements

	Operational	Non operational
Temperature:	15 ÷ 35 °C	-20 ÷ 40 °C
Relative humidity:	20 ÷ 80 %	5 ÷ 85 %

Your comments:

5.4 Packing

Individual shipping:

Gamma autoloader without single bins:

	Gamma 2/100	Gamma 4/165	Gamma 4/495	Gamma 8/250	Gamma 8/750
Width	-	-	-	-	-
Height	-	-	-	-	-
Depth	-	-	-	-	-
Netto	-	-	-	-	-
Brutto	-	-	-	-	-

Gamma autoloader with single bins:

	Gamma 2/100	Gamma 4/165	Gamma 4/495	Gamma 8/250	Gamma 8/750
Width	-	-	320	-	320
Height	-	-	500	-	500
Depth	-	-	570	-	**???**
Netto	-	-	-	-	-
Brutto	-	-	-	-	-

Double bins (independent packing):

	Gamma 2/100	Gamma 4/165	Gamma 4/495	Gamma 8/250	Gamma 8/750
Width	-	-	320	-	320
Height	-	-	500	-	500
Depth	-	-	570	-	**???**
Netto	-	-	-	-	-
Brutto	-	-	-	-	-

Palette shipping:

	Gamma 2/100	Gamma 4/165	Gamma 4/495	Gamma 8/250	Gamma 8/750
Width	295	295	295	295	295
Height	-	375	375	500	500
Depth	330	330	330	330	330
Netto	-	-	-	-	-
Brutto	-	-	-	-	-
pcs/palette					